51. An electronic tongue, comprising a pulse generator coupled to electrodes for contact with a fluid to be investigated, a recording device for recording transients obtained by application of pulses to said electrodes, and a computer for evaluating transients using multivariate pattern recognition by the method of claim 39.

52. An electronic tongue, as claimed in claim 51, wherein said computer is adapted to control said pulses based on amplitude, shape or frequency, or based on an interaction between a generated pulse and a measured response.--

REMARKS

The claims have been rewritten to obviate the 112 rejection raised in the Final Action, and also to better define the claimed invention and better distinguish the claimed invention from the prior art. No new matter has been entered.

Before considering the art rejections raised in the Final Action, a brief review of the general state of the art, and the relationship thereto of the present invention, may be useful.

The present invention relates to an electroanalytical method for analyzing a sample fluid using pulsed voltammetry. The use of pulsed voltammetry, in which voltage pulses of alternating potential are applied to a working electrode, and the resulting current is measured per se, is known in the art and is described in various textbooks covering the subject. Basically, there are three different types of pulsed voltammetry: large amplitude pulse voltammetry (LAPV), small amplitude pulse voltammetry (SAPV) and differential pulse voltammetry (DPV). Most commonly used is DPV. In DPV, the voltage is slowing scanned (typically from -1V to +1V), and an alternating voltage (in the order of 10-50mV) is superimposed. Values are collected at the end of each small voltage pulse, and the difference between two pulses is calculated. For analytical purposes, this technique most often gives better results.

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The technique described by Lewandowski et al. is in principle based on DPV. The difference being that instead of collecting values in the end of each superimposed pulse, one value is taken in the beginning and one value at the end of each superimposed pulse. That is to say, only two values for each pulse is collected, and the difference is calculated and used.

In the present invention, LAPV and SAPV are used. Due to onset of a voltage pulse to the electrode surface, charged species in the surroundings rush to the electrode surface, building up the so-called Helmholtz layer or electrical double layer. Furthermore, redox-active species in the close surroundings also will be oxidized/reduced. A capacitive current will be formed, which in principle will follow an exponential trail. The shape of this trail will be influenced by the amount of redox- active species, diffusion constants of inrushing ions and size of applied voltage. By carefully studying this shape in the so-called non-Faradic area, information concerning size, diffusion constants, concentration, and redox properties of the tested solution at the applied voltage pulse can be obtained. To obtain this information, the whole curve in the transient region must be studied. This is something quite different than the technique described by Lewandowski et al.

New independent claim 39 has been drafted to stress that it is the transient signals that are measured and evaluated, thus clearly distinguishing independent claim 39, and the various claims directly or indirectly dependent thereon, from Lewandowski et al.

Moreover, it is submitted that the combination of Lewandowski et al. and Lewis et al. cannot be said to achieve or render obvious new independent claim 39, or any of the claims directly or indirectly dependent thereon. In Lewis et al., a sensor array based on conducting polymers, are combined with multivariate data analysis. In Lewis et al., each sensor produces a discrete value (a resistance change). In the present claimed invention, the current transient

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values due to onset of voltage pulses are collected. The whole transients are parametisized, these parameters are then used with multivariate data analysis. Due to potential of the voltage applied and material of the working electrode, different transients will form. This data collection principle is quite different from the technique described by Lewis et al. Thus, no combination of Lewandowski et al. and Lewis et al. reasonably could be said to achieve or render obvious independent claim 39, or any of the claims dependent thereon.

In view of the foregoing amendments and comments, it is believed that the claims as presented are allowable over the art. Early and favorable action are respectfully requested.

Form PTO-2038 authorizing a charge in the amount of $370.00 to cover the RCE fee accompanies this amendment.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our deposit account number 08-1391.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231 on November 13, 2002, at Tucson, Arizona.

By Diana Carr

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